

ARRANGEMENT IN ONE OR MORE COMMUNICATION NETWORKS, WHEREIN
COMMUNICATION CHANNELS ARE ESTABLISHED BETWEEN TWO OR MORE
PARTIES

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Field of the invention

The present invention relates to an arrangement in one or more communication networks, wherein communication channels are established between two or more parties connected to said communication network(s), said arrangement comprising communication services offering access to communication channels to interconnected parties.

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Technical background

The Problem Area

Communication services offer access to communication channels to interconnected parties. Interconnectivity is realised by communication networks. Examples of communication services are: voice communication services, video conference services, and file transfer services. Examples of communication networks are: Public Switched Telephone Network (PSTN), Public Land Mobile Network (PLMN), Integrated Services Digital Network (ISDN), and the Internet.

The present invention provides a system for automatic establishment of related communication channels with support for automatic correlation of the information sent on the established communication channels.

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More specifically, the present invention provides a system for automatic creation of a group of communication channels between two or more parties connected to communications networks. The creation of a group of communication channels is initiated by external events. An identical correlation key, which may be used to identify a group, is sent on each of the communication channels belonging to a particular group. The key facilitates automatic correlation of information sent on the related communication channels at the terminal equipment of the parties involved.

Known Solutions and Problems with these

The problems that the present invention addresses are:

1. establishment of related communication channels; and
2. correlation of information sent on related communication channels.

The present invention provides automation of (1) and facilitates automation of (2), in a network centric fashion.

There are known solutions to (1) and (2). The known solutions pertain to the technical field of Computer Telephony Integration (CTI).

CTI

CTI combines computer technology and telephone technology. CTI may be used for call processing and for voice processing. Typically, CTI is used in Call Centre applications.

CTI call processing enables a computer to work alongside a human agent, helping the agent to handle calls more efficiently (eg., route customer incoming calls to an appropriate operator based on information in a customer database). With CTI voice processing, the computer takes the place of a human telephone operator and provides a gateway between the caller and the business information stored on the computer systems (eg., automated call answering).

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CTI solutions

(1) A CTI system may automatically establish a telephony communication channel by initiating a call request to the telephone network.

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(2) A CTI system may automatically correlate an incoming call (by extracting the Caller ID information element of signalling no. 7) with information stored in a customer database.

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CTI problems

CTI is very much dependant on the control functions provided to it by the telephone network. For instance, CTI relies heavily on the Caller ID information element of signalling system no. 7 to correlate incoming calls with information in customer databases. CTI cannot control the information sent from the telephone network, it can merely inspect it. Since it cannot control such information it is confined and limited by restrictions imposed by the telephone network.

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CTI is terminal centric in the sense that the logic and functionality is provided solely by additional terminal equipment (PABXs and computers) interacting with the

telephone network. Automatic establishment of calls is initiated by additional terminal equipment requesting a service from the telephone network. CTI provides a means of adding value to the services offered by the telephone network. However, the revenue margins for this added value is out of reach for the traditional network operator since the means is provided by customer terminal CTI equipment - not by the network itself.

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Further prior art

From WO 9638018 (LM Ericsson) there is known a method using an intelligent network that is invoked during call connection to provide connections and other information. The intelligent network can be connected to by ISDN or PSTN based telephones or via gateways to data networks, e.g. the Internet. The intention of this prior art is mobility within the data network in connection with conventional PSTN services. The internet may be used in order to locate the user, which may be a mobile unit in the data network. However, the prior art is silent about any correlation between sessions and is also silent about using Internet for setting up sessions, and still more silent about transferring a correlation key for facilitating such set-up.

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Objects of the invention

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An object of the present invention is to provide a system for automatic establishment of related communication channels.

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Another object of the present invention is to provide support for such automatic correlation of the information sent on the established communication channels.

Still another object of the present invention is to provide a system for automatic creation of a group of communication channels between two or more parties
5 connected to communications networks.

Yet another object of the present invention is in connection with such an automatic correlation of sessions to use a correlation key for further optimizing said
10 system.

Summary of the invention

15 These objects are achieved in a system as stated in the preamble, which according to the present invention is characterized in that said arrangement further comprises control means for automatic establishment of related communication channels with support for automatic
20 correlation of the information sent on said established communication channels.

More specifically, it can be said that said control means CU1) communicate with an external system (E) which in turn
25 comprises event related data, which data can either be called upon by the control means (CU1) or be transferred thereto when certain events occur, so as to initiate the creation of one or more groups of communication channels, substantially on the basis of external events.

30 Consequently, the present invention solves the problems en faced with the previously discussed CTI problems, and generally improves the utilization of communication networks.

35 By providing a system that enables complete control over correlation information coupled with automatic

establishment of communication channels in a network centric fashion, the restrictions imposed by the telephone network are overcome and the traditional network operator may offer a set of new value added services. In addition, the present invention provides a mechanism for initiating such services by external events.

Further features and advantages of the present invention will appear from the following description taken in connection with the enclosed drawings, as well as from the enclosed patent claims.

Brief discussion of the drawings

Fig. 1 is a schematic drawing illustrating the principle of an arrangement according to the present invention, comprising the main components thereof.

Fig. 2 is a schematic drawing illustrating an example of application according to the present invention, especially in connection with an internet enabled call centre.

Fig. 3 is a schematic drawing illustrating a further example of an application according to the present invention, especially related to stock watching.

Detailed description of embodiments

In Fig. 1 there is illustrated schematically the general principle of an arrangement according to the present invention, said Figure illustrating an example of components necessary for implementing an embodiment thereof.

The invention presents a solution that may be based on two logical interacting control units, Control Unit 1 (CU1) and Control Unit 2 (CU2), respectively. The two control units, with their interaction, form a system that enables
5 automatic establishment of communication channels with support for automatic correlation of information sent on the communication channels at the terminal equipment of the parties involved. An example of communication channels that may have correlation support by the present invention
10 is telephony calls and information stored on the Internet.

CU1 and CU2 are located within communications networks (eg. a PSTN or the Internet) and are capable of establishing communication channels (S1, S2) between two
15 or more parties connected to the communication networks. CU1 and CU2 may both act as parties in communication sessions. CU1 and CU2 may be located within the same communications network or they may each be located within different communications networks. CU1 and CU2 are logical
20 units in the sense that their physical implementation may coexist, and coexist with other components. A communication path interconnects CU1 and CU2.

E is an external system that contains data or can produce
25 data, or both, that is used as input to CU1. A communication path interconnects CU1 and E. Input to CU1 is denoted D. D must consist of control information that can be used by CU1, and may be used by CU2, to establish sessions. D may also contain user information that may be
30 transferred by CU1 or CU2, or both, to one or more parties involved in the channels to be established.

CU1 may request and initiate a transfer of input (D) from E or E may initiate a transfer of input (D) to CU1. Input
35 (D) to CU1 is initiated when certain events occur. Examples of events are: a date, the stock exchange reaches a certain threshold, a temperature measurement reaches a

certain limit, an Internet user has filled in a registration form and initiated a transfer of information to a server (which may be E), and so on. If CU1 is used to initiate a transfer of input (D), then CU1 contains logic for the monitoring of events of interest that trigger a transfer of input (D).

When CU1 receives input (D) from E, CU1 generates a key (K). The key (K) facilitates automatic correlation of information sent on the communication channels (S1 and S2) at the terminal equipment of the parties involved. The correlation key (K) may be generated based upon the information contained in D (e.g. the correlation key generated may be based upon the phone number of Party A if this were contained in D), or it may be based upon information contained in CU1, or both.

When the key (K) has been generated, CU1 may establish one or more communication channels (S1). The communication channels (S1) may be established based upon control information contained in D (e.g. the telephone numbers of two parties if these were contained in D, or the e-mail address of one party if this were contained in D) or it may be based upon information contained in CU1 (e.g. a stored e-mail or FTP address), or both. A communication session involves two or more parties (e.g. the placing and receiving parties in a traditional telephone call/session). CU1 may itself act as one of the parties in a session (S1) (eg., as the sending party of an e-mail message in an internet session, or as the placing party with stored voice messages in a telephony call/session).

The key (K) is transferred from CU1 onto the communication channels (S1) that have been established. If CU1 acts as a party in a session, then the user information (from D) and other information produced or contained in CU1 may be

distributed from CU1 onto one or more of the communication channels (S1).

Next, the key (K) is transferred from CU1 to CU2.

- 5 CU1 may at any time transfer additional control information to CU2. Control information from CU1 to CU2 may contain information from D (eg., control information with for instance telephone numbers, or user information).
- 10 When CU2 receives a key (K) it may establish one or more communication channels (S2). The communication channel (S2) may be established based upon the key (K) or based upon information contained in CU2. A communication session involves two or more parties. CU2 may itself act as one of
- 15 the parties in a session (S2). The key (K) is transferred from CU2 onto the communication channel (S2) that have been established.
- CU1 and CU2 may now have established a number of
- 20 communication channels, each session involving two or more parties. Every party involved has received the key (K) on the session or sessions that they participate in. If a party is involved in two or more of the established sessions, then the party may now use the key (K) to
- 25 correlate the particular sessions.

Restrictions

- For correlation of sessions to take place at a party, the party must have received the key (K) on all the
- 30 communication channels belonging to the group. If the transfer of (K) on a session to a destined party is delayed, perhaps due to network latency, so that (K) is not readily available on all sessions, then correlation of these sessions cannot take place. The problem may be
 - 35 solved by CU1 not sending the correlation key before S1 has been established.

Advantages

The present invention enables a network operator to offer new value added services that augments the functions
5 provided by CTI equipment.

Broadening

10 The following sections exemplify two possible applications of the invention.

Example Application: Internet enabled call centre

The present invention can be used to construct an Internet
15 enabled call centre application, as illustrated in Figure 2.

Products and services may be ordered using the Internet. A typical procedure is the following: An Internet user, and
20 potential customer, fills in a registration and purchasing form specifying name, address, telephone number and similar personalia, as well as information regarding the product or service of interest. Such forms are often found under the homepage of businesses offering transactions on
25 the Internet. Once the Internet user has filled in the required form, the user often has to click on a web button to send the information off to the sales department of the business in question. The sales department may thereafter ship the requested product or service out to the customer
30 based upon the information that the Internet user has specified.

Products and services may be ordered using the PSTN. A typical procedure is the following: A PSTN user, and
35 potential customer, initiates a phone call to the business of interest. The business may subscribe to certain IN services that route the call to, for instance, the sales

department that is open for business at the particular time of day. Furthermore, that sales department may subscribe to certain IN services that enable the PSTN user to navigate his call to an applicable sales representative via a telephone menu. Once the PSTN user reaches a sales representative at the other end, the PSTN user may specify name, address, telephone number and similar personalia, as well as information regarding the product or service of interest. The sales department may thereafter ship the requested product or service out to the customer based upon the information that the PSTN user has specified.

The present invention may be used to enable a combination of the two above scenarios by correlating Internet sessions with PSTN sessions.

(0) A person (Party A) may be interested in purchasing a product or service of some category. The person may log onto the Internet from a computer and search for businesses that advertise for such products or services by means of homepages on the Internet. One such business may make use of the present invention. If the person (Party A) finds the offerings from this business of interest he may, for instance, fill out a registration and purchasing form specifying his name, address, telephone number and similar personalia, as well as information regarding the product or service of interest. The form may be found on the system (E) that handles the homepage of the business in question. This system may be a web server. Once the person (Party A) has filled in the required form, the person (Party A) may, for instance, click (an external event) on a web button in order to (using the present invention) establish a call with the sales department and to send the information off to the sales department. The information that the person has filled in may be augmented (by the external system E) with, for instance, the telephone number of the sales department (which is still using

intelligent routing) and with the address of an FTP-server of the sales department.

- 5 (1) Once this information (D) has been assembled the system (E) may initiate a transfer of the information to the first control unit (CU1). In this scenario, CU1 is located within the Internet.
- 10 (2) CU1 first generates a correlation key (K). The correlation key generated is the phone number of Party A (which is contained in D).
- 15 (3) CU1 may then establish a session (S1) with Party B, using the FTP-address of the sales department contained in D. In this scenario one session (S1) is established by CU1 and the session pertains to Internet. CU1 acts as the sending party in this session. The correlation key (K) and D are transferred to the FTP-server of Party B on S1.
- 20 (4) The correlation key (K) is sent to the second control unit (CU2). In this scenario, CU2 is located within the PSTN. CU1 sends control information (containing the phone number of Party A and the phone number of Party B) prior to sending K.
- 25 (5) CU2 may then establish one session (S2) between Party B and Party A. In this scenario this session (S2) is a telephone call between Party B and Party A. CU2 does not act as a party in this session.
- 30 (6) The correlation key (K) is transferred on S2 using, for instance, the information elements calling party ID or signalling no. 7.
- 35 (7) Now the form information that the Internet user (Party A) has registered on the homepage of the business has been transferred to the FTP-server of Party B. The correlation key (K) has also been transferred along with

the form information. A call has been established between the Internet user (Party A) and the sales department (Party B). The correlation key (K) has been transferred on S2. The sales department can now automatically fetch the form information from the FTP-server using the correlation key.

Example Application: StockWatch

The present invention can be used to construct a StockWatch application, as illustrated in Drawing 3. The scenario depicted involves two parties: the holder of a certain stock (Party A) and a stockbroker (Party B).

(0) An external system (E) continuously monitors the stockexchange index; and

(1) (CU1) continuously fetches updated stockvalues (D) of interest from (E). In this scenario (E) and (CU1) are located within the Internet; and (E) interacts with a stockexchange computer.

(2) (CU1) contains logic for monitoring certain stockindex events. For instance, (CU1) may monitor the value of the stock that Party A holds. In the event that the value of the stock plunges to a certain threshold, (CU1) first generates a correlation key (K). The correlation key (K) consists of the phone number of Party A and the phone number of Party B.

(3) Next, (CU1) establishes two channels (S1), one to Party A and one to party B, and transfers the current stock value as well as the correlation key (K) to both parties. (CU1) acts as the sender of information on S1 to Party A and on S1 to Party B. The sessions over (S1) could for instance be a transfer of information by e-mail or a file transfer by FTP.

(4) CU1 transfers the correlation key (K) to CU2.

(5) CU2 establishes one channel (S2) between Party A and Party B. The channel pertains to a telephone call between
5 Party A and Party B. (CU2 could for instance be a Service Control Point (SCP) in an Intelligent Network (IN) interacting with a Service Switching Point (SSP)).

(6) CU2 transfers the correlation key (K) during the
10 establishment phase of S2 (eg. manipulating the calling party ID of signalling system no. 7).

(7) Now both the holder and the broker of the stock have
recieved the current stock value (on S1); and a telephone
15 call (S2) has been set up between the two parties. The correlation key (K) has been sent on both S1 and S2, to both parties. Using a CTI system, the current stock value could automatically be retrieved and displayed on the
computer screen when the holder and broker pick up their
20 telephones.